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AGILENT TECHNOLOGIES, INC.
Legal Department, DL 429
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EXAMINER

WASHBURN, DOUGLAS N

ART UNIT PAPER NUMBER

2863

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,645

Applicant(s)

WONG ET AL.

Examiner

Douglas N. Washburn

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-9,14-17 and 20 is/are rejected.
- 7) ☒ Claim(s) 3-5,10-13,18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 13 November 2003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-9, 14-17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama US 6,421,624) (Hereafter referred to as Nakayama).

Nakayama teaches:

Connecting a first port of the device under test to a port of a calibration module in regard to claim 1

(e.g.; column 6, lines 28-63; figure 6, element 120);

Connecting a second port of the device under test to a first port of a device tester module in regard to claim 1

(e.g.; figure 6, element 146);

Connecting a third port of the device under test to a second port of a device tester module in regard to claim 1

(e.g.; figure 6, element 148);

Performing measurements by the device tester to obtain calibration parameters, including: changing, by the calibration module, termination values at the port of the calibration module in response to commands from the device tester, the changing of the termination values being performed without physical disconnection of the port of the calibration module from the first port of the device under test module in regard to claim 1

(e.g.; column 6, lines 28-63);

Calibration parameters are three-port S-parameters module in regard to claim 6

(e.g.; column 6, lines 64-67);

Calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 7
(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 7
(e.g.; column 7, lines 7-58);

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 7
(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 7
(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 7
(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 7
(e.g.; column 7, lines 7-58);

A device tester is a network analyzer in regard to claim 8
(e.g.; column 6, lines 12-14);

A first port in regard to claim 9
(e.g. ; figure 8, element 48) ;

A second port in regard to claim 9
(e.g. ; figure 8, element 46) ;

A communication port in regard to claim 9
(e.g. ; figure 8, element 44) ;

A device tester communicates to a calibration module through the communication port, instructing the calibration module to change termination values at a port of the calibration module without physical disconnection of the port of the calibration module from a first port of the device under test, the instructing being given during testing of the device under test when a second port of the device under test is connected to the first port of the device tester, when a third port of the device under test is connected to the second port of the device tester, and when the device tester is obtaining calibration parameters for the device under test in regard to claim 9

(e.g.; column 8, lines 16-49; figure 8, element 44);

Calibration parameters are three-port S-parameters in regard to claim 14
(e.g.; column 6, lines 64-67);

Calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 15
(e.g.; column 7, lines 7-58);

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 15
(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 15

(e.g.; column 7, lines 7-58);

A communication port means for communicating to a calibration module in order to instruct the calibration module to change termination values at a port of the calibration module without physically disconnecting the port of the calibration module from a first port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A first port means for connecting to a second port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A second port means for connecting to a third port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A device tester obtains calibration parameters for the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

Calibration parameters are three-port S-parameters in regard to claim 17

(e.g.; column 6, lines 64-67);

And calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 20

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 20

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 20

(e.g.; column 7, lines 7-58).

Claim Rejections - 35 USC § 103

2 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama in view of Rowell et al. (US 6,417,674) (Hereafter referred to as Rowell).

Nakayama teaches:

Connecting a first port of the device under test to a port of a calibration module in regard to claim 1

(e.g.; column 6, lines 28-63; figure 6, element 120);

Connecting a second port of the device under test to a first port of a device tester module in regard to claim 1

(e.g.; figure 6, element 146);

Connecting a third port of the device under test to a second port of a device tester module in regard to claim 1

(e.g.; figure 6, element 148);

Performing measurements by the device tester to obtain calibration parameters, including: changing, by the calibration module, termination values at the port of the calibration module in response to commands from the device tester, the changing of the termination values being performed without physical disconnection of the port of the calibration module from the first port of the device under test module in regard to claim 1

(e.g.; column 6, lines 28-63);

Calibration parameters are three-port S-parameters module in regard to claim 6

(e.g.; column 6, lines 64-67);

Calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 7

(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 7

(e.g.; column 7, lines 7-58);

A device tester is a network analyzer in regard to claim 8

(e.g.; column 6, lines 12-14);

A first port in regard to claim 9

(e.g. ; figure 8, element 48) ;

A second port in regard to claim 9

(e.g. ; figure 8, element 46) ;

A communication port in regard to claim 9
(e.g. ; figure 8, element 44) ;

A device tester communicates to a calibration module through the communication port, instructing the calibration module to change termination values at a port of the calibration module without physical disconnection of the port of the calibration module from a first port of the device under test, the instructing being given during testing of the device under test when a second port of the device under test is connected to the first port of the device tester, when a third port of the device under test is connected to the second port of the device tester, and when the device tester is obtaining calibration parameters for the device under test in regard to claim 9
(e.g.; column 8, lines 16-49; figure 8, element 44);

Calibration parameters are three-port S-parameters in regard to claim 14
(e.g.; column 6, lines 64-67);

Calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 15
(e.g.; column 7, lines 7-58);

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 15
(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 15
(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 15

(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 15

(e.g.; column 7, lines 7-58);

A communication port means for communicating to a calibration module in order to instruct the calibration module to change termination values at a port of the calibration module without physically disconnecting the port of the calibration module from a first port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A first port means for connecting to a second port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A second port means for connecting to a third port of the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

A device tester obtains calibration parameters for the device under test in regard to claim 16

(e.g.; column 8, lines 16-49);

Calibration parameters are three-port S-parameters in regard to claim 17

(e.g.; column 6, lines 64-67);

And calibration parameters are the following three-port S-parameters:

S_{11} , representing a reflective signal from the first port of the device under test to the first port of the device under test module in regard to claim 20

S_{21} representing the transmission signal from the first port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{31} representing the transmission signal from the first port of the device under test to the third port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{12} representing the transmission signal from the second port of the device under test to the first port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{22} representing the reflective signal from the second port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{32} representing the transmission signal from the second port of the device under test to the third port of the device under test in regard to claim 20

S_{13} representing the transmission signal from the third port of the device under test to the first port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

S_{23} representing the transmission signal from the third port of the device under test to the second port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

and, S_{33} representing the reflective signal from the third port of the device under test to the third port of the device under test in regard to claim 20

(e.g.; column 7, lines 7-58);

wherein $S_{21} = S_{12}$, $S_{13} = S_{31}$, and $S_{23} = S_{32}$ in regard to claim 20

(e.g.; column 7, lines 7-58).

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Nakayama is silent regarding:

Performing a one-port calibration of a first port of a device tester in regard to claim 2;

And performing a one-port calibration of a second port of a device tester in regard to claim 2.

Rowell teaches:

Performing a one-port calibration of a first port of a device tester in regard to claim 2

(e.g.; column 2, lines 5-12);

And performing a one-port calibration of a second port of a device tester in regard to claim 2

(e.g.; column 2, lines 5-12);

In regard to claim 2, it would have been obvious to one skilled in the art at the time of the instant invention to modify the teaching of Nakayama of performing measurements by the device tester to obtain calibration parameters, including: changing, by the calibration module, termination values at the port of the calibration module in response to commands from the device tester, the changing of the termination values being performed without physical disconnection of the port of the calibration module from the first port of the device under test module with the teaching of Rowell of performing a one-port calibration of a first port of a device tester and performing a one-port calibration of a second port of a device tester because measurements of these standards would have been used to solve for the error terms in the error model and to remove systematic errors caused by directivity, source match and frequency response.

Allowable Subject Matter

3 Claims 3-5, 10-13, 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Claim 3 recites, in part, "the device under test is a power splitter". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 4 recites, in part, "the device under test is one of the following: a power splitter; a directional coupler". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 5 recites, in part, "the device under test is a directional coupler". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 10 recites, in part, "the device under test is a power splitter". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 11 recites, in part, "the device under test is a power splitter". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 12 recites, in part, "the device under test is a directional coupler". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 13 recites, in part, "the device under test is a directional coupler". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 18 recites, in part, "the device under test is a power splitter". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 19 recites, in part, "the device under test is a directional coupler". This feature in combination with the remaining claimed structure avoids the prior art of record.

It is these limitations, which are not found, taught or suggested in the prior art of record, and are recited in the claimed combination that makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas N. Washburn whose telephone number is (571) 272-2284. The examiner can normally be reached on Monday through Thursday 6:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DNW



MICHAEL NGHIEM
PRIMARY EXAMINER

3/4/05